

Date: Sat, 15 Oct 94 04:30:20 PDT
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>
Errors-To: Ham-Homebrew-Errors@UCSD.Edu
Reply-To: Ham-Homebrew@UCSD.Edu
Precedence: List
Subject: Ham-Homebrew Digest V94 #304
To: Ham-Homebrew

Ham-Homebrew Digest Sat, 15 Oct 94 Volume 94 : Issue 304

Today's Topics:

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 Cordless Phone Reciever?
 Fractional turns on toroids?
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 Need info on Filters
 pin diode attenuators & AGC (2 msgs)
 RF Switches Anyone?
 Suggestions for my power distribution system?

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: Thu, 13 Oct 1994 15:17:27 GMT
From: serafin@spdc.ti.com (Mike Serafin)
Subject: Address to MOUSER

aw@kthbib.lib.kth.se wrote:

: I plan to build the NorCal 40 QRP-trcvr, and I understand that
: most parts are to be find at MOUSER. Can anybody supply me with
: the post address to MOUSER, and e-mail as well if any.

This is out of the Dallas Yellow pages, I don't have the zip, but the phone is

listed so you can call for the proper mailing address

Mouser Electronics
2401 Hwy 287 N
Mansfield, TX

800-346-6873

Mike
KC5GRW

Date: 14 Oct 1994 18:38:05 -0400
From: ells22@aol.com (ELLS22)
Subject: Biasing tetrode tube - affects gain?

In article <dgfCx3Ft.Gs2@netcom.com>, dgf@netcom.com (David Feldman) writes:

Dave, I too am progressing on a passive grid driven 4-1000A Amp. I am using screen voltage on it though to get sufficient gain to make a relatively efficient amp on HF. Since the tube will be run AB1, I think I will need about 5KV on the plate and 750 volts on the screen. I am considering grounding the screen and running the entire tube "below" ground to avoid the need for the infamous screen bypass Cap.

I am really interested in this subject of passive input circuitry Amps and will gladly share info with you as far as my technical knowledge goes. Gud Luk!!!

Russ Ellsworth WA6CWV Boise, Idaho

Date: 12 Oct 1994 21:30:05 -0400
From: embera@bcfreenet.seflin.lib.fl.us (J. Robert Runyon)
Subject: Cordless Phone Receiver?

There are some excellent ones in the 1989 Motorola "TELECOMMUNICATIONS" data book starting on page 2-44 using their MC3362 Low Power Dual Conversion FM Receiver chip. It was made specifically for that purpose. You can also use their MC3363 chip, which includes a RF Amplifier stage. They are beautiful and easy to work with.

John Fleming

(fleming@mcs.com) wrote:

: Does anyone know where there might be a schematic/parts list, or article,
: about building a receiver for standard (non-digital) cordless phone

: transmissions? I think they're somewhere in the 49 Mhz range, identified by
: 1-10 channels. Anyone Help?
: Thanks,
: John Fleming, N9NDH

: -----
: "May your Sandcastles | John Fleming |
: as big as the beach" | johnflem@mcs.com |
: | "opinions are free, advice will cost you"|
: =====
--

J. Robert Runyon
embera@bcfreenet.seflin.lib.fl.us

Date: Wed, 12 Oct 1994 23:33:10 GMT
From: dermer@ssd.intel.com (Greg Dermer)
Subject: Fractional turns on toroids?

In article <CxFFnv.HCH@srgenprp.sr.hp.com>, alanb@hpnmarb.sr.hp.com (Alan Bloom)
writes:

...
|> fractional turns for the main windings. I agree that it is not possible
|> to achieve a fractional turn: So long as the two wire ends are connected
|> through the rest of the circuit, the turn is effectively completed anyway.
|>
...

Off the subject slightly, but you CAN get fractional turns. Though theoretically
possible at any frequency, it's practically limited to frequencies where
laminated or tape-wound cores are used. Drill a hole through the core and
run one turn through it so that that turn only links part of the flux in
the core. Voila, a partial turn.

It's a real drag trying to drill a hole in ferrite, though. ;)

Yeah, it's kind of lame.

Greg

dermer@ssd.intel.com

Date: 14 Oct 1994 21:38:09 GMT
From: mgarrett@prairienet.org (Mark A. Garrett)

Subject: Gerry 49MHZ monitor w/intercomm

I recently aquired a Gerry model 600 49MHZ Baby monitor with an intercom feature. I only have the transmitter and no reciever. The transmitter from what I can tell runs on 49.830 and listens in in 49.890 MHZ. It also has separate circuitry that looks like it belongs in a garage door opener. I can only guess that this is some sort of secondary reciever needed to make the intercom work.

I have in the past converted several 49 Mhz gear to the 6 meter ham band and was wondering if this might be a useful canadate for such a conversion as a low powered 6 meter repeater or such.

Is there anyone that is familiar with this unit and or has access to schematics out there that can give some advice on this unusual baby accessory?

--

Mark Garrett mgarrett@firefly.prairienet.org
 KA9SZX @ N9LNQ.#ECIL.IL.USA.NA

Date: 14 Oct 1994 03:01:32 GMT
From: hskim@ripley.ece.uiuc.edu (Han Kim)
Subject: help with 12v supply regulation

Chris Witkowski (chrisw@bnr.ca) wrote:

> In article <37h9fu\$3kpl@yuma.ACNS.ColoState.EDU>,
> Robert Taylor <greendot@lamar.ColoState.EDU> wrote:
> > Hello I am building a 12v regulated power supply but i need help
> > regulating it! I don't know wich transistor's to use or exactly
> > how they should go. The transformer is a 12 amp non center tap.
> > could someone please mail about what the suitable transistors would
> > be and how to controll them!
> > Thanks a bunch
> > Robert
> >

> The simple and obvious answer is: just use a 7812. This is a 3-terminal
> regulator chip. But, given the voltage of your transformer further ana-
> lysis is needed. A 7812 requires about 2 volts or more across it to work
> properly. There are low dropout regulators that require .6 to 1 volt a-
> cross them (unfortunately I don't know what's available). The voltage
> drop across the rectifiers can be reduced by using Schottky diodes in-
> stead of silicon diodes.

> Measure the open circuit voltage of the transformer secondary. Put rated
> load on the secondary (use power resistors and/or lamps) and measure the
> voltage. Post the results as well as the maximum current you want to draw.
> I or someone else will then be able to tell if it is possible for you to

> get what you want with the transformer you have and how best to get it.

> While it is possible to design and build a discrete voltage regulator circuit it is so much easier to use a chip.

> --

> -----

> Chris Witkowski | Bitnet: chrisw@bnr.ca | Phone: (613) 832-0135

> BNR Ltd. | UUCP: uunet!bnrgate!bcars288!chrisw | FAX: (613) 763-2626

> -----

> Standard disclaimer applies.

If I'm not mistaken, what Robert wants is to get about as much of regulated juice out of his transformer (which is 12 A). And a 7812 cannot do this alone; max current limit for that one is 1A. (By the way, this doesn't mean short-circuit current, I think.) While I know there is a 5A version of 7812 (something like 78T12 or 78K12 - gotta go home and search my junkbox), not sure if a 10A version is out there. (Yes, I've seen 10A version of 7805, but there is a huge difference between $10A \times 5V = 50W$ and $10A \times 12V = 120W$.) Maybe that's why I haven't seen any commercial power supplies made of these regulator ICs (besides the cost thing).

The number of pass transistors are decided by several factors:

1. Voltage drop across the transistor
 2. maximum supply current
 3. maximum junction (?) temperature of the transistors used
- etc..

As a rule of thumb, one 2N3055 can handle about 5A of current when well heat-sinked for 17V in - 12V out regulator circuit. But then again, this also depends on the size of the heatsink (or, to be precise, thermal resistance of the heatsink).

The chapter on power supply from ARRL handbook will serve a good starting point, Robert; go to your library and see if there are any other books on power supplies (linear, switching, etc).

I am also working on a 12V 10A power supply myself. I wanted to use three 2N3055s for the project (better be safe than sorry), but alas, had only two heatsinks...

Han KB9BQ0 / HL1AMS

--

Han Seok Kim | hskim@uiwpl.s.ece.uiuc.edu
Wave Propagation Lab. | (217) 333 - 4406
Univ. of Illinois at Urbana-Champaign | Linux - to die for

Date: 14 Oct 1994 19:25:24 GMT
From: tahir@tcdsp1.mmm.com ("Tahir Kayani")
Subject: ICOM 751A

Hi all,
I've been told by ICOM that the 751A is no longer being manufactured. I need to purchase one or more of these sets. Does anyone know of a dealer who might still have some in stock?
Thanks.

--

Date: 15 Oct 1994 01:31:18 GMT
From: myers@cypress.west.sun.com (Dana Myers)
Subject: Looking for MPF102 replacement

In article 9971@ul.tb.isc.rit.edu, jdc3538@ul.tb.isc.rit.edu (J.D. Cronin) writes:
>

>I have a few projects in mind that use a MPF-102 for pre-amps on
>2-meters and 440. Are there any newer parts that have better gain
>or less noise? The Motorola RF Device book doesn't list substitutes
>for the MPF102.

I'd recommend the J308/309/310 family for 2m/70cm pre-amp use. A J310 is certainly superior to an MPF102 in these applications. However, you may need to adjust the circuit to the different specs of the J310 (have a look at the data sheets). A 2N4416 is essentially identical to an MPF102, and may be easier to find.

* Dana H. Myers KK6JQ, DoD#: j | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Dana.Myers@West.Sun.Com | reflect those of my employer *
* "Antenna waves be burnin' up my radio" -- ZZ Top *

Date: 13 Oct 94 10:40:39 CST
From: ldheiss@ualr.edu (Larry Heiss)
Subject: MOUSER'S ADDRESSES AND PHONE#'S

TOLL FREE 800-346-6873

Northern CA	WEST	CENTRAL
M-F 5AM - 7PM (PST)	SAME	M-F 7AM-9PM (CST)
370 TOMKINS COURT GILROY, CA 95020-3631 PH. 408-842-5522 FAX -7375	11433 WOODSIDE AVE. SANTEE, CA 92071-4795 619-449-2222 -6041	2401 HIGHWAY 287 NORTH MANSFIELD, TX 76063-4827 817-483-4422 -0931

Bill Kirkland (kirkland@bgty22.bnr.ca) wrote:
: Does anyone have any suggestions on building pin diode

: attenuators @ 9 MHz. My interest is in building an
: IF stage with pin diode attenuators for AGC and I have been
: thinking about using the MAR or MAV series of amplifiers for
: the amplifier chain. I know that this might be over kill when
: you could use MC1350's or dual gate mosfets but the MC1350's are
: only rated 0 - 70 deg C ...

0 to 70 deg C is 32 to 158 deg F. And the parts will work just fine
way below freezing, it's just that the specifications are not guaranteed.
For amateur applications, the temperature range is not an issue.

AL N1AL

Date: 15 Oct 1994 01:43:00 GMT
From: myers@Cypress.West.Sun.Com (Dana Myers)
Subject: pin diode attenuators & AGC

In article 4n6@bmerha64.bnr.ca, kirkland@bgtys22.bnr.ca (Bill Kirkland) writes:

>Does anyone have any suggestions on building pin diode
>attenuators @ 9 MHz. My interest is in building an
>IF stage with pin diode attenuators for AGC and I have been
>thinking about using the MAR or MAV series of amplifiers for
>the amplifier chain. I know that this might be over kill when
>you could use MC1350's or dual gate mosfets but the MC1350's are
>only rated 0 - 70 deg C and dual gate mosfets seem to be extremely
>hard to obtain and once a source is found relatively expensive.

>

>What else is done for IF amps and AGC?

Well, you could use discrete devices. A 2N5109, for example, can
make a very strong IF amplifier at 9MHz. A JFET, such as a J310,
is also a pretty good choice, not as strong as a 2N5109 but since
you're planning on running good AGC this probably doesn't matter.

The drawback to using a discrete device is primarily that you'll have to design
biasing and impedance matching circuitry. The MMIC parts (MAR/MAV/MSA) are
very appealing in that they are already biased and matched. The return
loss performance at the input on most of the MMICs is quite good, you can
use it as termination for filters, but a discrete design may require a
little more work to accomplish the same thing.

A discrete design is likely to offer lower noise and higher gain, and
even may have a better output power (i.e. better dynamic range).

An overlooked idea is using one of the smaller RF power FETs as a strong
IF/AGC amplifier. They're pretty damn good on the noise figure, and offer

excellent dynamic range. I've never tried it, but even a VN10KM or somesuch might make a good 9MHz IF amplifier.

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* Dana H. Myers KK6JQ, DoD#: j | Views expressed here are      *
* (310) 348-6043                | mine and do not necessarily  *
* Dana.Myers@West.Sun.Com        | reflect those of my employer *
* "Antenna waves be burnin' up my radio" -- ZZ Top              *
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Date: 14 Oct 94 17:15:47 GMT
From: kevinpu@atm.COM (Kevin Purcell)
Subject: RF Switches Anyone?

I posted this to the QRP list but didn't get a response:

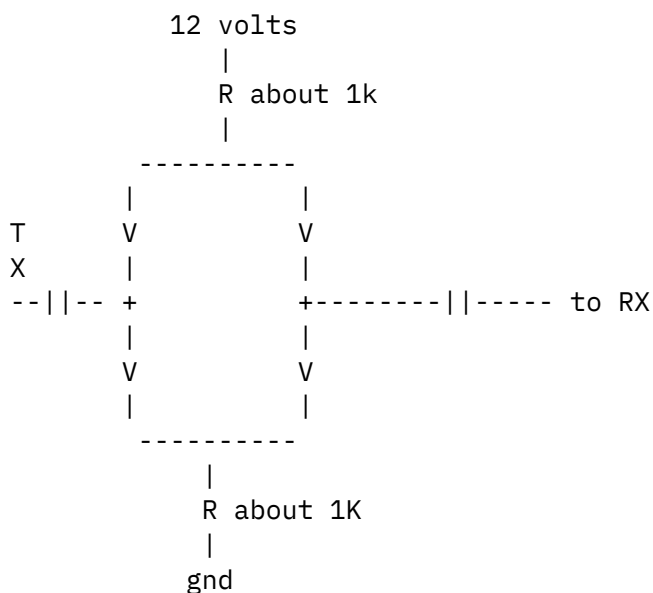
In the NEQRP club 40/40 circuit NN1G used a diode bridge (which looks biased in the middle power rail and ground) for QSK switching.

This circuit doesn't have any LC so its is wide band.

However I have not figured out its mode of operation. I presume it use the RF from the TX to switch the diodes off on TX whereas the DC bias turns them on on RX. The TX port is connected to the TX PA and the antenna.

Anyone care to clarify this one for me?

The "V" is a diode with + end (anode) down



After a weekend and some thought I came up with the following explanation:

Marking up the DC voltages on this circuit:

```
>          12 volts @ 5mA
>          |
>          R about 1k
>          |
> 6.7v ----- 6.7v
>          |           |
>T         V           V
>X         |           |
>--||-- + 6.0v +-----||----- to RX
>          |           |
>          V           V
>          |           |
> 5.3v ----- 5.3v
>          |
>          R about 1K
>          |
>          gnd
```

All diodes are biased on with about 2.6mA flowing through each diode.

So it seems that when the TX voltage rises to exceed plus or minus 0.6V alternate sets of diodes (A and B) are turned off, the remaining diodes are biased on.

In the above example if the input RF voltage exceeds 0.6V the diodes A are turned off and the diodes B remain in. The RX is prevented from seeing the TX RF power and the

In the quiescent state all the diodes are biased on and so signal can get through to the RX (with not too much power being wasted if the RX impedance is $\ll 1k$ (the resistance of the bias supply)).

Am I on the right track?

Does this circuit have advantages over the conventional back to back diodes (over and above the its lack of a tuned circuit)? Does it have better isolation? Better IMD performance.

73

Kevin Purcell	Attachmate Corp	kevinpu@atm.com	206/649-6489
Seattle dBug Mac Developers SIG organiser		xenolith@halcyon.com	N7WIM / G8UDP

Date: Fri, 14 Oct 1994 03:30:17 GMT
From: finster@zeus.fasttax.com (David Finster)
Subject: Suggestions for my power distribution system?

I posted this to rec.radio.amateur.equipment and didn't get much response. After consideration, that may have been the wrong group, and this one appears more on target. My apologies if you've seen this over there and don't want to read it again. I understand I should have cross-posted it in the first place.

=====

I'm setting up a ham shack here in my apartment and I'm looking for suggestions. Currently I'm using (well, listening for now... still checking the mailbox every day for my ticket) a HTX-202 and an Icom 4AT for radios, along with a couple scanners. I have a two large (larger than car battery, about the size of semi-tractor battery) 12 volt gel-cell batteries and want to use them in my power system. (got 'em for free, might as well use em...) My current plan runs something like this:

Hook both gel-cells up in parallel, and trickle charge them from solar cells. Then run the output from the batteries up to a power distribution center (large project box) with a central amp and volt meter on the main line to monitor the battery state. I plan to have 4 or 5 outputs on the project box. The current plan is to use some Radio Shack "universal voltage adapters" to regulate the voltage on the output. I've found the cigarette lighter type at swap meets for a couple bucks each. That way I can switch the voltage between 3, 6, 9, and 12 volts at each output, and toggle the polarity by changing the end plug. I'm not sure how much current draw those adapters will stand, even though they are the "high-power" type, and are vented for cooling.

My thought was by using a system like this, I could kill any AC hum in the system. Also, I could easily stay on the air when the power goes out.

I do have a few questions:

The batteries have no markings at all. All I know is that they are 12 volt, they will take a charge when I charge them up with my 10 amp car battery charger, and they weigh a ton. (ok, about 75 or 80 pounds each.) Any ideas on what sort of current draw they will stand, and what sort of battery life I can expect? These were discarded from a UPS system because they reportedly "wouldn't take a full charge". After charging with my battery charger, they measure right at 12 volts on my dinky voltmeter, under no load.

If I can get a bank of solar cells together that would put out 12+ volts at a trickle charge (100 - 200 milliamp) will I hurt the battery by leaving it hooked up all the time?

Do I need diodes in-line with the solar cells to prevent the batteries from leaking voltage back through the solar cells?

Is my solar-cell idea just a fantasy?

Assuming my solar-cell idea is a fantasy, anyone have useful schematics for a trickle charger I can build pretty cheap?

I thought it would be useful to have the main volt and amp meters switchable so that I could monitor the main line for total current draw and voltage, or monitor each output alone. I think it would be too expensive (though impressive!) to have separate meters for the main and all outputs. The problem I see is that switching the meters in and out of circuit would disrupt power to the outputs while switching. Any suggestions to solve this problem?

I plan to place fuses inline with each output. Any suggestions on type of fuses, or are there small circuit breakers that would do the job properly?

Any hidden grounding problems with the above setup that might bite me? I'm currently running from a homemade folded dipole, and a 5/8 wave mag-mount antenna, so the whole setup is floating with no earth ground at all. Should I be concerned with it?

I know someone out there must have a similar setup. Any comments or hindsight observations? I apologise in advance if these seem to be trivial questions and a waste of bandwidth. But then, at least I'm not bitching about for-sale ads and such... :-)) I'm not an EE but I'm pretty handy with a soldering iron, at least when dealing with digital systems. I'm learning and reading as much as possible about analog and RF stuff, but I haven't seen this topic covered in the books I have. I've never built a power system before, so any feedback or pointers to other good books would be helpful. I'd far rather buy books and parts and build it myself, even if it ends up costing the same as an "off-the-shelf" system. At least I end up learning something in the process, and know how to fix it when it breaks.

-- Dave
finster@fasttax.com

End of Ham-Homebrew Digest V94 #304
